

DETAILED ACTION

The Amendment filed June 1, 2009 has been entered. Claims 25-32 and 34-48 remain pending. Claim 33 has been canceled.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 25, 28, 29, 32, and 35-48 rejected under 35 U.S.C. 103(a) as being unpatentable over Lenhardt (US 4911779) in view of Quelen (FR 2636380).
4. Regarding claims 25, 28, 29, and 32, Lenhardt generally discloses an apparatus for a slipless conveyance of two plates (i.e. substrates) (see abstract). The apparatus includes a mechanism for driving, guiding, and operating a nozzle (i.e. tool) (col. 16, lines 53-63). The nozzle discharges an extrusion between the glass plates along their top edge (i.e. collaborate with an edge) (col. 18, lines 13-15). Lenhardt teaches the plates can be properly spaced apart (col. 3, lines 34-37) and conveyed in any desired orientation (col. 4, lines 18-19). The apparatus of Lenhardt utilizes vacuum-applying conveyors (suction module), which act on the broadsides of the plates. One of ordinary skill in the art would appreciate that this apparatus (with vacuum-applying conveyors) would allow the substrates to move translationally.
5. Lenhardt teaches the tool holder device as discussed above but does not expressly teach the elements of the rotary support, vertical beam, and the linear guidance element. Quelen generally discloses a machine for automatically laying a flexible spacing strip at the periphery of a double glazing. Quelen teaches a post (i.e. vertical beam) which has a head (i.e. rotary support) that moves vertically (i.e. linear guidance element) on the post (see abstract and Figure). At each corner the head pivots by 90 degrees (i.e. prevents the rotary support from rotating when the rotary support is moved translationally).

6. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Lenhardt to include the edge-sealing tool of Quelen as Lenhardt teaches a method of conveying plates with the four edges exposed and Quelen teaches a machine for sealing the edge of the plates.

7. Regarding claims 36-48, Lenhardt teaches vacuum-applying conveyors that act on the broadsides of the plates (col. 3, lines 8-9). Lenhardt also teaches an embodiment in which a bottom edge-supporting conveyor (chassis) is also provided (col. 6, lines 11-13). Lenhardt teaches two vacuum-applying conveyors (suction module), which are opposite each other and spaced an adjustable distance away from each other (col. 3, lines 34-37). The plates can be transferred between vacuum-applying conveyors (modules) (col. 3, lines 40-43; operated to suck and take over).

8. As to the fixed and moving chassis limitation (frame of the apparatus), one of ordinary skill in the art would appreciate that both of the vacuum-applying conveyors of Lenhardt are capable of moving but could also be considered fixed when they are arrested at a predetermined position. As noted above, Lenhardt teaches the vacuum-applying conveyors may have virtually any orientation, not only vertical or approximately vertical (X) (col. 4, lines 15-20) but also horizontal (Y) and at an incline (Z). Lenhardt also teaches that the vacuum-applying conveyors (transporting means) may be correspondingly adjusted (means for positioning) in dependence on the output signals of the sensors (control loop), which detect the size of the glass plates (col. 17, lines 28-37). Substrates being substantially equivalent.

9. Lenhardt does not expressly teach assembling an insulating glazing by using an interlayer. Quelen teaches a tool for automatically laying an interlayer at the periphery of a

double glazing (see abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to seal the glazing with the machine of Quelen to hermetically seal the glass plates to provide an insulating air space between the plates as is well known in the art.

10. Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lenhardt and Quelen as applied to claims 25, 28, 29, 32, and 36-48 above, and further in view of Okano et al. ("Okano", US 5358568).

11. Regarding claims 26 and 27, Lenhardt teaches a sensor which leads the nozzle by a predetermined distance and is responsive to the position of the glass plates (col. 17, lines 64-67). The examiner finds this to be a sufficient teaching of claims 26 and 27. In any event, Okano also discloses a spraying apparatus in which a sensor is mounted on either the nozzle or the manipulator to detect the distance between the nozzle and the surface being sprayed (see abstract). A controller responds to the signals produced by the sensor to maintain the nozzle at a substantially constant distance from the surface during spraying (abstract). Control systems are well known as shown above. Therefore, it would have been obvious to one of ordinary skill in the art to utilize control loops or methods in the apparatus of Lenhardt as modified by Quelen in order to precisely and accurately perform process operations (e.g. positioning a substrate, positioning a tool).

12. Claim 30 and 34 rejected under 35 U.S.C. 103(a) as being unpatentable over Lenhardt and Quelen as applied to claims 25, 28, 29, 32, and 35-48 above, and further in view of Demars et al. ("Demars", FR 2807783, citations taken from the US equivalent; US 7141282).

13. Regarding claim 30, Quelen teaches sealing the periphery of the double glazing. However, the above references do not expressly teach the at least two press rollers being control-loop controlled independently. Demars teaches at least one press roller, controlled by an articulated arm, that applies and compresses the tape against the edge of the glazing unit over its entire perimeter (col. 6, lines 33-36). Control systems are well known in the art as discussed above. Figure 5 of Demars shows press rollers moving in opposing directions. One of ordinary skill in the art would appreciate that the rollers being part of the control-loop, wherein the rollers can be controlled together or independently.
14. Regarding claim 34, Demars teaches that, to save time in the girding operation, it is preferable to provide two rollers which are driven in two opposed directions and carry out the girding of two halves of the perimeter simultaneously (col. 6, lines 36-39).
15. In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize rollers of Demars as part of the control loop, and thereby obviate extensive grinding operations.
16. Claim 31 rejected under 35 U.S.C. 103(a) as being unpatentable over Lenhardt, Quelen, and Okano as applied to claims 25-29, 32, 35 and 36-48 above, and further in view of Demars.
17. Regarding claim 31, control systems are well known in the art as already discussed. Specifically, Okano teaches a control system where a nozzle is maintained at a substantially constant distance by responding to signals (abstract). Demars teaches the press rollers as discussed above.

18. It would have been obvious to one of ordinary skill in the art at the time of the invention to control the position of the press rollers or nozzle relative to the substrate in order to obtain a precise, consistent and uniform seal.

Response to Arguments and Amendment

19. Applicant's arguments have been fully considered.

20. Applicant argues that Lenhardt fails to disclose a tool holder device for supporting at least one tool configured to collaborate with an edge of at least one substrate. This argument is not found persuasive as Lenhardt explicitly teaches discharging an extrusion between the glass plates along their top edge (col. 18, lines 13-15).

21. Applicant argues that Lenhardt fails to disclose certain elements regarding the rotary support and the vertical beam. This argument is found persuasive but is moot in view of the new grounds of rejection.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL LEE whose telephone number is (571)270-7711. The examiner can normally be reached on Monday-Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Katarzyna Wyrozebski can be reached on (571)272-1127. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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